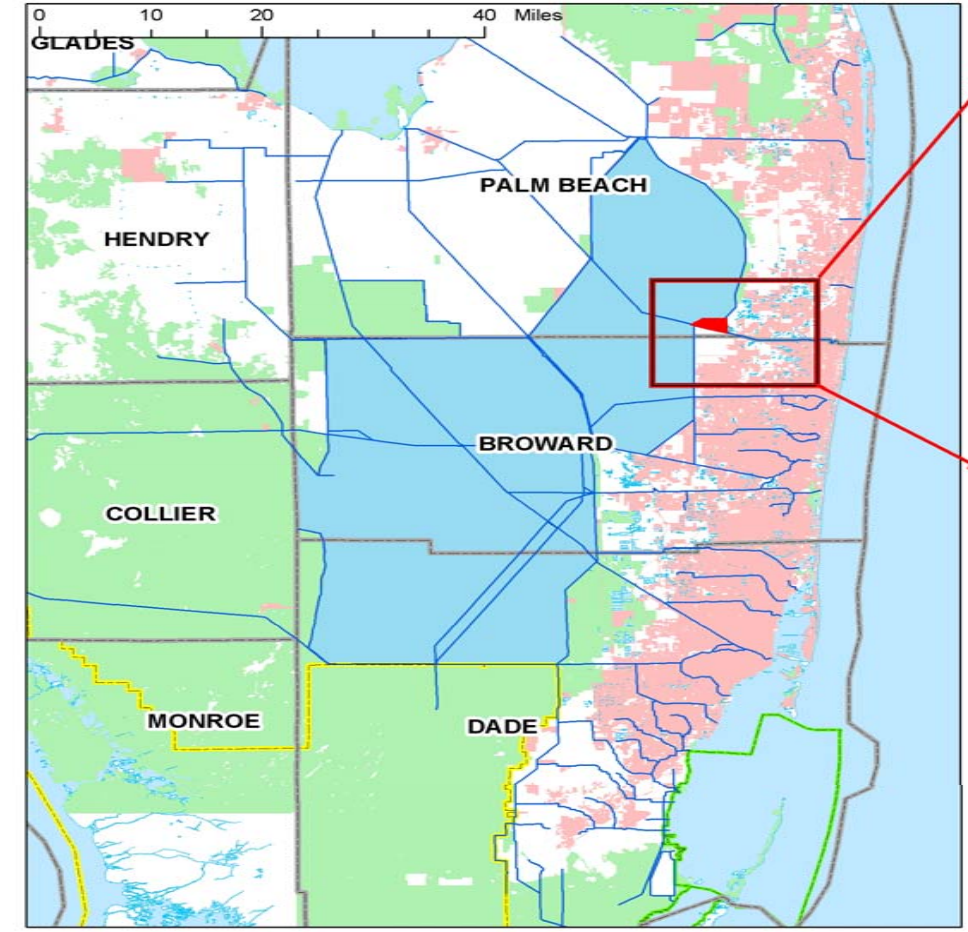
# Site 1 Impoundment Project

## Basis of Design

## Water Resources Advisory Committee (WRAC)

May 4, 2006

# Site 1 Project Location Map





- Site 1 Impoundment
- Canal
- County Boundary
- Water Conservation Areas
- Everglades National Park
- Biscayne National Park
- Urban Development
- Wetlands

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# Site 1 Project Benefits

- Capture water currently lost to tide
- Supplying as much of the Hillsboro Basin 2050 water demands as possible / practical
- Reduce natural system water releases from Water Conservation Areas (WCAs) 1 and 2
- Maximize water available for the natural system / greater Everglades
- Reduce damaging fresh water discharge to the estuarine system
- Improve hydroperiods / hydropatterns in WCA 1 & 2

# Additional Site 1 Analyses Performed

| | |
|---|---|
| Water Budget Analysis | water available to pump from Hillsboro Canal<br>➢determine pump station capacity<br>➢measure whether project goals met |
| Seepage and Groundwater Modeling | estimate seepage from impoundment, identify measures to prevent off-site impacts |
| Hydraulic Modeling | preliminary project operations, flood routing |
| Wind and Wave Run-up | determine embankment height, erosion protection, earthwork quantities |
| Opinions of Probable Construction Cost | develop preliminary costs for project alternatives including update of PIR costs |
| Project Optimization for Performance and Cost | compare project benefits and probable cost to develop ‘best value’ alternative |

# Site 1 Change in Project Costs

Original PIR cost estimate (10/04)…….$49.5M

- Improvements to the existing L-40 Levee
- Construction materials & fuel costs increased significantly in 17 mos
- Application of design standards (embankment height increase, more erosion protection)
- 1500 cfs pump station cost increase
- Hillsboro Canal improvements

Basis of Design Report OPCC* for Construction of PIR Project (03/06)……..~$140M

*OPCC-Opinion of Probable Construction Cost

# Site 1 Project Optimization

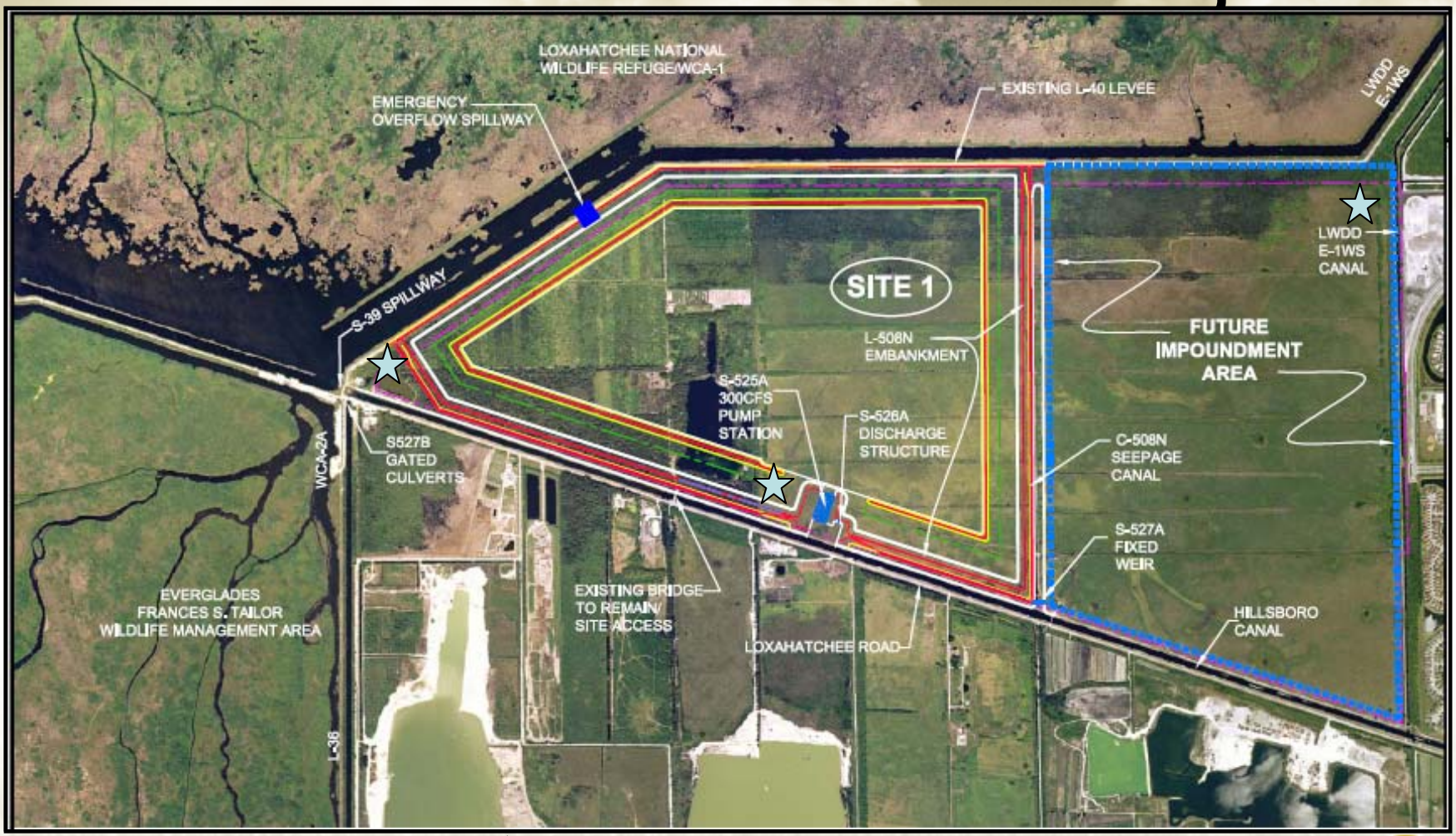
Evaluated Optimization Alternatives

- Design Criteria Impacts
- Water Budget…Pump Station Size
- Impoundment Size
- Embankment Height
- Erosion Protection

# Site 1 Evaluated Alternatives

| Impoundment Size, Total Pump Capacity, Normal Water Depth | Storage Volume (acre-feet) | % 2050 Water Demand Met | % Full Project Benefits Met | OPCC |
|---|---|---|---|---|
| 1660 acres, 1500 cfs, 8 feet | 13,000 | 84 | 100 | $140M |
| 1660 acres, 640 cfs, 8 feet | 13,000 | 84 | 100 | $ 90M |
| 1350 acres, 420 cfs, 8 feet | 10,500 | 79 | 94 | $ 86M |
| 1100 acres, 375 cfs, 8 feet | 8,500 | 74 | 88 | $ 72M |
| **840 acres, 300 cfs, 8 feet** | **6,500** | **68** | **81** | **$ 62M** |
| 1660 acres, 300 cfs, 4 feet | 6,500 | 66 | 79 | $ 72M |

# Site 1 Recommended Project




☆ Potential Recreation Area

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# Site 1 Project OPCC Summary

## Opinion of Cost

| | (millions of $) |
|---|---|
| Earthwork | $ 30.3 |
| Pump station | $ 6.8 |
| Structures | $ 2.4 |
| Other components | $ 0.1 |
| Total Direct Cost | $ 39.6 |
| Indirect costs | $ 10.5 |
| Contingency | $ 11.9 |
| **TOTAL** | **$ 62.1** |
| **Current A8 Budget** | **$ 32.2** |

## Schedule

| | |
|---|---|
| Prelim. Design | July 2006 |
| Final Design | March 2007 |
| Construct. Start | June 2007 |
| Construct.Ends | Dec.2009 |

# COMMENTS

- Possibility of Dry-out
- Embankment Armoring
- Different Alternative from PIR- Smaller impoundment
- Spillway to the LNWR

# Site 1 Impoundment Project Questions / Discussions


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